

DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES

Office of Structural Materials

Quality Assurance and Source Inspection



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Contract #: 04-0120F4Cty: SF/ALA Rte: 80 PM: 13.2/13.9File #: 69.28**WELDING INSPECTION REPORT****Resident Engineer:**Pursell, Gary**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-002645**Date Inspected:** 13-May-2008**Project Name:** SAS Superstructure**OSM Arrival Time:** 630**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1530**Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island **Location:** Shanghai, China**CWI Name:** See below**CWI Present:** Yes No**Inspected CWI report:** Yes No N/A**Rod Oven in Use:** Yes No N/A**Electrode to specification:** Yes No N/A**Weld Procedures Followed:** Yes No N/A**Qualified Welders:** Yes No N/A**Verified Joint Fit-up:** Yes No N/A**Approved Drawings:** Yes No N/A**Approved WPS:** Yes No N/A**Delayed / Cancelled:** Yes No N/A**Bridge No:** 34-0006**Component:** OBG/Tower**Summary of Items Observed:**

Caltrans Quality Assurance (QA) Inspector Sherri Brannon arrived on site at the Zhenhua Port Machinery Company (ZPMC) facility at Changxing Island, in Shanghai, China to periodically monitor welding and Quality Control (QC) functions. While on site the QA Inspector observed and/or discovered the following.

OBG/Tower Sub-Assembly**Bay 2 - 77 & 144 Meter Mock-up:**

QA Inspector Brannon observed tower mock-up to be idle during this shift. QA Inspector Brannon also, randomly observed ZPMC personnel CNC torch cutting with 75% natural gas and 25% oxygen for interior splice plate for various tower elevations and beveling various tower plates using the horizontal milling machine.

Bay 3-OBG side/bottom/edge panels:

QA Inspector Brannon randomly observed ZPMC qualified welders, tack welding various T stiffeners/edge plates utilizing a shielded metal arc welding (SMAW) process with a 4.0mm diameter electrode, filler metal brand E7018, class TL508 non-FCM and filler metal brand E7018, class THJ506Fe-1 for FCM material. Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-P-2112 and WPS-B-P-2112-FCM respectively.

Bay 3 – Heat straightening:

QA Inspector Brannon randomly observed ZPMC personnel performing heat straightening on various side/bottom panels. Side and bottom panels cause for heat straightening. Heat straightening is performed by flame straightening using oxygen acetylene using a hand torch.

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Bay 3-OBG W shape beams (splice)

QA Inspector Brannon randomly observed ZPMC qualified welders Mr. Li Zhao Qian ID#048810 and Li Shu Qiang ID#053609 splice welding various W shape beams BP167-001-003 and BP086-001-005 respectively. Mr. Li and Mr. Li was observed welding in the 3G (vertical) position utilizing a flux corded arc welding (FCAW) process with a 1.4mm diameter electrode, filler metal brand E71T-1, class Supercored 71H, semi automatic. QA Inspector Brannon observed the ZPMC QC Inspector Mr. Wu Ming Kai verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS). QA Inspector Brannon observed preheat and welding parameters measured by the QC CWI Inspector Mr. Wu Ming Kai to be: a minimum preheat temperature of 27°C and welding parameters amps of 201/202, volts of 25.6/25.6, a travel speed of 113/112 mm/min and a gas flow of 20L respectively. Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-2233-B-U2-F.

Bay 3-OBG bottom panels (splice)

QA Inspector Brannon randomly observed ZPMC qualified welders Mr. Xin Meng ID#048810 root welding various bottom panel splice connections for BP032-001-007, pl 703A to pl 703B and BP167-001-007, pl 818A to pl 818B. Mr. Xin was observed welding in the 1G (flat) position utilizing a flux corded arc welding (FCAW) process with a 1.4mm diameter electrode, filler metal brand E71T-1, class Supercored 71H, semi automatic. QA Inspector Brannon observed the ZPMC QC Inspector Mr. Wu Ming Kai verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS). QA Inspector Brannon observed preheat and welding parameters measured by the QC CWI Inspector Mr. Wu Ming Kai to be: a minimum preheat temperature of 75°C and welding parameters amps of 308, volts of 30.5, a travel speed of 312 mm/min and a gas flow of 20L. Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-2221-B-L2c-S-1.

Bay 4 – Heat straightening side panel:

QA Inspector Brannon randomly observed ZPMC personnel performing heat straightening on various side/bottom/edge panels and tower diaphragm flange plates. Side/bottom/edge panels cause for heat straightening welding distortion and tower diaphragm flange plates cause for heat straightening mill induced. Heat straightening is performed by flame straightening using oxygen acetylene or natural gas using a hand torch.

Bay 4 Tower Diaphragm Sub Assembly:

QA Inspector Brannon randomly observed ZPMC welder Mrs. Gu Cai Hong ID #053748 groove welding fill/cover pass's joining SA238 (W) to P414 (W) weld joint # WSD1 SA238 -1A/1B. Mrs. Gu was observed welding in the 1G (flat) position utilizing a submerged arc welding (SAW) process with a 4.8mm diameter electrode, filler metal brand LA-85, class ENi5, machine. QA Inspector Brannon observed the ZPMC QC CWI Inspector Mr. Zhao Chen Sun verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS). QA Inspector Brannon observed preheat and welding parameters measured by the QC CWI Inspector Zhao Chen Sun to be: preheat temperature of 180°C and welding parameters amps of 640, volts of 30.2, and a travel speed of 493 mm/min. Welding parameters observed by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-3221-B-U3c-S-1.

Bay 4 – Tower Diaphragm Flange Sub Assembly

QA Inspector Brannon randomly observed ZPMC personnel assembling tower diaphragm flange for ESD1 SA 331.

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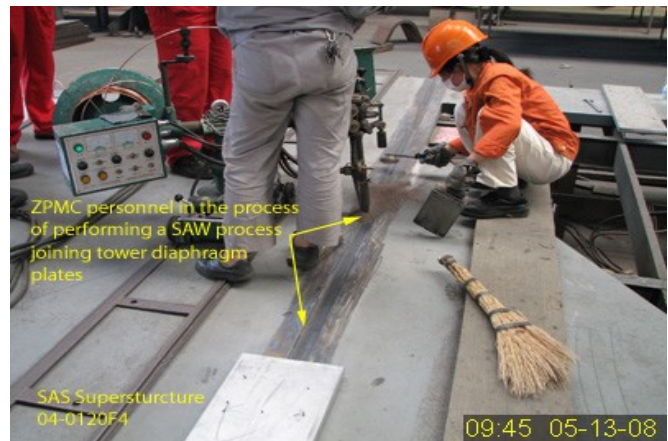
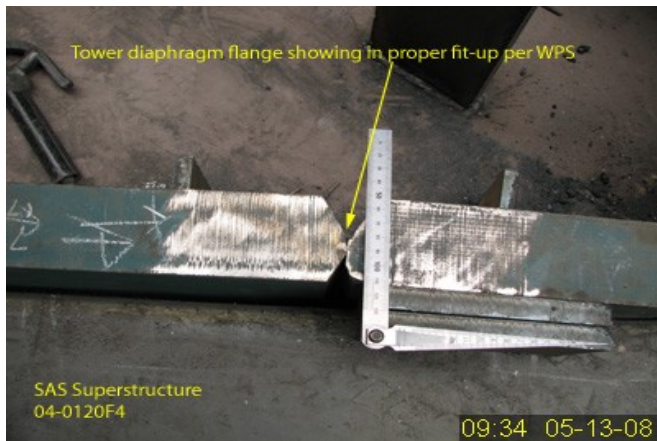
QA Inspector Brannon was informed by ABF Don Walton that the assembly of ESD1 SA331 has been rejected by ABF for fit-up due to the fit-up tolerances are not per the Welding Procedure Specification (WPS).

OBG/Tower Sub Assembly

Bay 1 – Deck Panel VT

The QA inspector performed visual weld inspection to the deck panels deck panel DP549-002 welds 1 thru 8. The QA inspector found weld discontinuities on all of the weld identified as incomplete fusion, overlap, under fill, undercut, oversize and undersize welds. Deck Panel DP- 549-002 had been visual inspected by ZPMC and ABF. A hand written visual inspection report was generated on this date with all the findings.

The following digital photograph below illustrates observation of the activities being performed.



Summary of Conversations:

No relevant conversations to report.

Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Mazen Wahbeh, (818) 292-0659, who represents the Office of Structural Materials for your project.

Inspected By: Brannon, Sherri

Quality Assurance Inspector

Reviewed By: Carreon, Albert

QA Reviewer